

MPM124
 4/29/71
 # users = 48
 MFTN 3
 15.5x

***** MULTICS PERFORMANCE ANALYSIS *****

USER NO	COMMAND	TIME	CPU TIME	NO OF P.F.	384 K core 2 CPUs 1 channel
0	login	1122	3.112	0 + 91	
	edm	1131	5.143	175 + 182	
	fortran	1132	5.321	6 + 203	
	edm	1137	2.610	80 + 105	
	fortran	1138	5.039	14 + 202	
	rename	1139	.872	6 + 39	
	print	1139	.974	5 + 25	
	a_prime\$prime	1141	3.345	41 + 94	
	list	1141	.793	4 + 36	
	df	1142	1.620	4 + 50	
	edm	1151	4.553	186 + 122	
	fortran	1152	5.390	18 + 173	
	edm	1157	2.236	98 + 91	
	fortran	1158	3.354	20 + 171	
	rename	1158	.688	4 + 48	
	print	1159	.889	5 + 37	
	b_prime\$prime	1200	1.926	24 + 61	
	list	1201	.660	6 + 20	
	df	1202	1.710	2 + 48	
	logout			+	

***** SUMMARY *****

USUR NO	TOTAL CPU TIME	TOTAL REAL TIME	TOTAL NO OF P.F.	NO OF INTER-ACTIONS	AVERAGE CPU TIME	AVERAGE RESPONSE TIME	AVERAGE NO OF P.F.
USER 0	47.123	2320	698 + 1707	66	.713	5.9 (3.4)	10 + 25

***** #users *****

(25.717	1151	335 + 436	33	.779	6.4 (3.7)	10 + 28	49 first half
	21.406	1136	363 + 771	33	.648	5.4 (3.0)	11 + 23	47 second half

↑
except "fortran"

Total metering time 0:17:18

Ave queue length 10.66
 Ave eligible 5.56 ←
 Working-set factor .50
 Working-set addend 0
 Te first (seconds) 2
 Te last (seconds) 2
 Ti max (seconds) 8

IDLE TYPE	TIME	%
Total idle	0:02:47	3.06
Multi-prog idle	0:02:07	6.14
Loading idle	0:00:29	1.40
Non-multi-prog idle	0:00:10	.52
Zero idle	0:00:00	0.00

} less idle time

COUNTER	TOTAL	ATB	#/INT
Interactions	419	2.479 sec	
Noadings	2499	.416 sec	5.964
Blocks	1774	.586 sec	
Wakeups	1799	.577 sec	
Waits	47541	21.849 msec	113.463
Notifies	156436	6.640 msec	
Schedulings	2300	.452 sec	5.489
Pre-empts	46959	22.120 msec	112.074

Time	%Int	%Cum	Ave	%T	%CumT
0.0	77	77	.219	30	30
.5	13	90	.734	16	46
1.0	4	93	1.262	8	54
1.5	3	97	1.940	12	66
2.0	1	98	2.336	4	70
2.5	1	99	2.839	6	75
3.0	0	99	3.306	1	76
3.5	0	99	3.800	2	78
4.0	0	99	4.352	0	79
4.5	0	100	4.966	1	80
5.0	0	100	5.273	1	80
5.5	0	100	5.767	0	80
6.0	0	100	6.810	1	81
6.5	0	100	6.844	1	82
7.0	0	100	7.774	1	83
7.5	0	100	8.149	14	100

DEPTH	%PF	TBPF	%GTW	TBS	%CPU
1	21.2	43.6	17.4	30.1	23.0
2	22.0	52.2	18.2	35.4	23.4
3	20.7	38.9	21.0	21.5	20.0
4	16.6	33.4	19.1	16.3	13.9
5	13.2	30.4	15.6	14.3	10.1
6	9.3	32.3	11.6	14.2	7.5
7	.5	0.0	.5	0.0	.5

MTBPF = 42.7 msec
 ↑
 This is exceptionally long.

r 1141 3.330 22+50

Multics 15.5x, load 50.5/51.0; 49 users

r 1144 .256 4+10

fsm -all

Total metering time 0:22:37

	#	ATB		
Deactivations	2718	.499	sec.	
Seg Faults	3771	.360	sec.	
Bound Faults	160	8.484	sec.	
Setfaults (all)	7498	181.036	msec.	
Setfaults (acc)	116	11.702	sec.	
Updates	3718	365.091	msec.	
Steps	7977	170.165	msec.	
Skips (ehs)	1835	.740	sec.	
Skips (inf)	2092	.649	sec.	
Skips (level)	1108	1.225	sec.	
Skips (init)	0	0.000	sec.	
Skips (ring)	7	193.915	sec/	
Skips (lock)	33	41.134	sec.	
Skips (nc)	8	169.676	sec.	
AST Sizes	4	16	64	64
Number	408	160	90	0
Need	2077	577	240	0
Steps	5960	1048	642	0
Ave Steps	2.9	1.8	2.7	0.0
Grace (sec)	92.9	207.2	190.3	0.0

	#	ATB	
Needs	104327	13.011	msec.
Ceiling	1970	.011	min.
Laps	659	2.060	sec.
Steps	275925	4.919	msec.
Skip wired	2578	526.535	msec.
Skip used	142608	9.518	msec.
Skip mod	18337	74.026	msec.
Skip os	8075	168.100	msec.

315 pages, 31 wired.

Average steps 2.645 ← pretty small

	DRUM	DSU270	DSU170
Left	781	7387	9409
Reads	89469	11658	426
ATB	15.172	116.436	3186.400
Writes	59982	8389	122
ATB	22.630	161.808	11126.283
ATB I/O	9.083	67.711	2477.019
% Cpcy	22	77	3
Ave Latency	22.913	108.057	82.265

r 1146 2.186 19+24

Multics 15.5x, load 46.5/51.0; 45 users

r 1147 .449 8+17

tim -all

Total metering time 0:24:56

	%	AVE	
Page Faults	11.04	4803.693	↑ longer
Drum interrupts	6.21	3219.887	
Getwork	8.90	1789.947	
Seg Faults	1.80	13445.851	
Bound Faults	.27	47767.453	
Interrupts	5.30	4492.028	
Gate faults	2.74	3670.000	
MP Idle	6.75		
Loading idle	1.42		
MMP Idle	.39		
Zero idle	0.00		
Other	55.18		← increased (?)

r 1147 2.608 22+56

hmu

Multics 15.5x, load 47.5/51.0; 46 users

r 1148 .402 4+15

ppnt -all

Total metering time 0:25:29

Working-set factor	.50
Working-set addend	0
Min-eligible	2
Max-eligible	6
% bad pre-paging	29.05
Drum faults/pre-paging	.72
% drum priority moves	15.30
% misses	4.96
Ave post size	48.78
Ave purge size	17.30
% purged	35.46
Ave pre size	26.05
Ave pre-pagings	12.83
% pre-paged	49.25
Thrashing percentage	6.81 ←
Ave post in core	38.70
Ave working-set size	18.21
Ave used in quantum	41.24
Pre-page time	35.81
Post-purge time	40.42
Calls	3207

r 1148 1.103 6+14

hmu

Multics 15.5x, load 48.5/51.0; 47 users

pci

```

cpu a 4
cpu b 5
} 2 CPUs
sihc a 2 0 7 11 13
men c 200 on
men e 200 on
men d 200 on
} 384 Kcore
clock a 0 25 edt 4
drum 0 7700 1 4 5 6
d270 0 60650 a 27 10. 501060207 3100411
d170 0 105340 a 37 8. 102030405 607
part mult 0 7700 0 57650 0 104540 0 0
part dump 0 0 0 0 104540 577 0 0
part salv 0 0 57650 1000 0 0 0 0
int 27 30 31 32 37
rnds 11 1000.
schd 400000 20 20 100
sst 16. 408. 160. 90. 0.
ttyb 5
tty a 60 3 1200.
tty a 70 3 1200.
tty a 100 32. 133.
tty a 200 32. 133.
tty a 300 24. 150.
tty a 400 14. 110.
intk 77 mult

```

r 1149 1.796 4+27

hmu

Multics 15.5x, load 48.5/51.0; 47 users

r 1150 .602 4+23

tcq

avg = 13, elapsed time = 0 sec, 24 active last 15 sec.

flags	tu	dtu	te	ts	ti	tssc	event	d	ws	process
MLERI	53	53	640	0	0	.321	0	0	8	Sekino
WNLEI	566	567	643	0	0	.001	23373	1	13	initializer
MLERI	20	21	257	0	0	-.001	0	0	10	Mills
WE	92	92	0	0	0	.257	0	0	20	Doyle
WE	10	11	0	0	0	.260	0	0	4	Keller
W	272	273	0	0	0	2.654	0	0	17	Quinones
W	32	32	0	0	0	.608	0	0	8	PDP8
W	27	27	0	0	0	.533	0	0	7	Cohen
W	121	122	0	0	0	.213	0	0	10	Lickliger
	24	24	96	2001	2075	.454	0	0	49	Wolman
W	194	195	60	4001	8000	5.028	0	0	33	Niles
	196	196	43	4001	8000	8.043	0	0	15	Translator
	262	263	53	2000	8000	13.080	0	0	33	Retriever
W	485	485	46	0	8000	47.735	0	0	22	Snyder
	233	233	49	0	8000	33.340	0	0	22	Brooks
W	72	73	14	0	8000	23.695	0	0	3	EMoore
	282	283	107	0	8000	18.926	0	0	34	Donaghue
W	810	810	79	0	8000	19.355	0	0	72	Backup
r 1151	3.320		24+82							